

Appl. No. : 10/696,244
Filed : October 28, 2003

REMARKS

Claims 1-18 are pending in the present application. Applicants are pleased to note that Claims 11, 13, and 15-18 have been allowed. Claims 3, 6, 9, 10, 12, and 14 were objected to as being dependent on a rejected base claim and Claims 1, 2, 4, 5, 7 and 8 were rejected as anticipated by Raaijmakers et al. (U.S. Patent No. 6,727,169). Claims 1 and 4 have been amended to clarify that an oxygen bridge is formed between a diffusion barrier and a metal film in the recited methods. Support for this amendment can be found, for example, in paragraph [0010] of the Specification. In addition, Claim 12 has been amended to clarify that the diffusion barrier film may comprise a transition metal, a transition metal nitride, a transition metal carbide, a transition metal phosphide, a transition metal boride, or a mixture thereof. Finally, Claim 14 has been amended to depend from Claim 11 rather than Claim 10. No new matter is added by these amendments.

Claim Objections

Claim 12 was objected to because the term "said materials" lacked antecedent basis. Claim 12 has been amended herein to remove the term "said materials." As a result, Applicants submit that Claim 12 is in condition for allowance.

Claim Rejections

Claims 1, 2, 4, 5, 7 and 8 were rejected under 35 U.S.C. § 102(e) as anticipated by Raaijmakers. In particular, the Examiner found that Raaijmakers teaches a method for manufacturing a semiconductor device comprising exposing a substrate comprising a diffusion barrier to an oxygen-containing reactant to create a surface termination of oxygen-containing groups and subsequently depositing a second film onto the substrate.

Claim 1 has been amended to indicate that the recited oxygen-containing groups or oxygen atoms form a bridge between the first film and the second film. Similarly, Claim 4 has been amended to indicate that the surface termination forms an oxygen bridge between the recited diffusion barrier and the subsequently deposited metal film. As Raaijmakers has no teaching or suggestion of forming an oxygen bridge between a diffusion barrier layer and a metal layer, Applicants submit that the rejection of Claims 1 and 4 should be withdrawn. As Claims 2-

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3 and 5-10 depend from either Claim 1 or Claim 4 and contain all of the limitations thereof in addition to further distinguishing features, Applicants submit that the rejection of these dependent claims should also be withdrawn.

In addition, Applicants note that Claim 14 has been amended to depend from Claim 11. As Claim 11 was found to be allowable, Applicants submit that the rejection of Claim 14 should be withdrawn.

Conclusion

For the reasons presented above, Applicants submit that the present application is in condition for allowance and respectfully requests the same. If any issues remain, the Examiner is cordially invited to contact Applicants' representative at the number provided below in order to resolve such issues promptly.

Respectfully submitted,

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